What is claimed is:

1. A method for detecting gold in at least one ore sample, comprising:

a) obtaining an ore sample suspected of containing gold;

b) contacting a surface of said ore sample with a gold-specific protein; and

c) detecting the presence of the gold-specific protein on said surface of said ore sample;

whereby gold may be detected.

2. The method of claim 1, further comprising quantitating the gold that is detected.

3. A method for detecting gold in at least one ore sample, comprising:

a) obtaining an ore sample suspected of containing gold;

b) contacting a surface of said ore sample with a gold-specific protein;

c) contacting said surface with a proteolytic agent to proteolyze said gold-specific protein into a proteolytic fragment; and

d) detecting said proteolytic fragment;

whereby gold may be detected.

4. The method of claim 3, wherein the gold-specific protein is GBP.

5. The method of claim 3, wherein the proteolytic agent is trypsin.

6. The method of claim 3, wherein said proteolytic fragment is the alkaline phosphatase domain of GBP.

7. The method of claim 3, wherein the method is performed in a multiwell plate.

8. The method of claim 7, wherein the detection comprises luminescent detection.

9. The method of claim 8, wherein the detection comprises exposure of the multiwell plate to light-sensitive film.

10. The method of claim 3, wherein the detection is quantitative.

11. The method of claim 8, wherein the detection is quantitative.

12. A method for extracting gold from a mineral suspension, comprising:

a) obtaining a sample of a processing solution suspected of containing gold and magnetite;

b) contacting said sample with a magnetic mineral binding reagent comprising a gold-specific protein to form a magnetic mineral binding reagent:gold complex; and

c) applying a magnetic field to said sample;

whereby gold may be extracted.

13. A method for extracting gold from a mineral suspension, comprising

a) obtaining a sample of a processing solution suspected of containing gold;

b) contacting said sample with a hydrophobic reagent comprising a gold-specific protein to form a hydrophobic reagent:gold complex;

c) adding a flotation reagent to said sample;

d) agitating said sample;

whereby gold may be extracted.